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Fluctuation-noise spectroscopy and a "universal" fitting function of amplitudes of random sequences

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Abstract

A "universal" fitting function has been recognized that makes use of the eigen-coordinates method (Physica A 285 (2000) 547) to accurately describe the distribution of ordered amplitudes within random sequences (taken from a diversity of sources). It is shown that sequences with a discrete structure can be described in terms of specific distributions of relative frequencies with respect to the number of quantum levels. An investigation of these quantum distributions leads to an increase in both sensitivity and selectivity, when attempting the statistical detection of various predominant factors of the hidden signals. The physical meaning of this new function is discussed and a proposal is made as the basis of a new *fluctuation-noise spectroscopy*, in which the recognized function can be used for the detection of small signals and/or the forerunners of strong signals that are hidden within the random sequences analyzed.

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0. Introduction

Random sequences of different nature are currently the object of intensive study. The main reason for such attention can be attributed to the unsatisfactory progress that

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